

conditions determining the form and density of the earth's crust, by M. Faye. The conclusions of modern physicists regarding the uniform flattening of both terrestrial poles are vindicated against M. de Lapparent's captious objections. The general charge that the work of geodesy is far from completed is admitted; but it is pointed out that, in order to continue this work, it is not necessary to sweep away the secure results already obtained; it will be safe to prosecute it on the safe lines already laid down by Sabine, Freycinet, Foster, Clarke, Lütke, and other eminent men of science.—Action of manganese on the phosphorescent property of carbonate of lime, by M. Edmond Becquerel. The experiments here described place in a clear light the action of manganese, explaining how the carbonate of lime derived from the solution of Iceland-spar in pure hydrochloric acid always leads to preparations of orange phosphorescent sulphurets, while the phosphorescent matter is always bright green when the carbonate of lime used in the preparation is aragonite.—On the nitric substances of vegetable soil, by MM. Berthelot and André. A first series of experiments is here described, which have been carried out in the presence of diluted hydrochloric acid for the purpose of determining the chemical constitution of the nitric substances found in all vegetable soils in association with carbon, hydrogen, and oxygen, and almost absolutely insoluble.—On the composition of cider, by M. G. Lecharrier. A quantitative analysis is given of the various ciders at present consumed in Paris, and coming chiefly from Normandy and Brittany. The results show an average proportion of alcohol lying between 5.1 and 9.40 per cent.—On the red fluorescence of alumina, by M. Lecoq de Boisbaudran. These experiments show that the presence of chromium appears to be indispensable for the production of the red fluorescence of alumina. There seems to be a complete analogy between the parts played by chromium and all other active substances, such as Mn, Bi, Z<sub>a</sub>, Z<sub>β</sub> or Sm.—Report made, in the name of the Section of Physics, in reply to a letter of the Minister of Public Instruction, Fine Arts, and Worship on sundry questions connected with the establishment of lightning-conductors on the buildings of the Lyceums (Commissioners: MM. Becquerel, Berthelot, Cornu, Mascart, Lippmann, and Fizeau). The report considers it indispensable for complete safety to have all iron roofs, doors, sashes, pipes, &c., carefully connected with the general apparatus usually attached to these buildings as protections against electric discharges.—On the fundamental principles of the higher geometry, by M. A. Mouchot. To generalise the figures of geometry by assigning them well-defined imaginary points, and then to prove that the algebraic symbols express all the relations of magnitude or position between the elements of these figures, is the double problem which has engaged the attention of the author for the last thirty years, and a rational and complete solution of which is now submitted to the Academy.—On certain problems in which are considered, on a plane curve, arcs of the same origin traversed in the same time as the corresponding chords, by M. G. Fouret.—On a new testing exploder ("exploseur-vérificateur") of quantity and tension, by MM. Louis de Place and Bassée-Crosse. This apparatus consists of a moist pile of the Place-Germain system, an induction bobbin, and a telephone. It is described as very handy, portable, and durable, advantageously replacing the exploders of quantity and the exploders of tension. It also verifies the circuits at any given moment without danger of premature explosion.—Calorimetric researches on the specific heats and changes of state at high temperatures, by M. Pionchon. In this first communication the author gives, in tabulated form, the results of his calorimetric studies for silver, tin, iron, nickel, and cobalt. His experiments fully confirm the opinion already announced by M. Berthelot on the so-called law of Dulong and Petit.—On the tensions of vapour of solutions made in ether, by M. Em. Raoult. The tensions of vapour for the solutions here determined by Dalton's method show that the molecular diminutions of tension are always comprised between 0.67 and 0.74, with a general average of 0.71, whatever be the composition, chemical function, and molecular weight of the substances held in solution.—Researches on the bi-metallic phosphates and allied salts, and on their transformations, by M. A. Joly.—Saturation of normal arsenic acid by magnesia, and formation of ammoniaco-magnesian arseniate, by M. Ch. Blarez. These researches on the formation of the arseniates of magnesia and of ammoniaco-magnesian arseniate have been undertaken for the purpose of completing the author's studies on the saturation of normal arsenic acid.—On the phenomena attending the heating and

cooling of cast steel, by M. Osmond. In continuation of his studies of these phenomena between the normal temperature and 800° C. the author here gives the results of his researches brought up to 1200° C.—On the influence of silicium on the state of the carbon in pig-iron, by M. Ferdinand Gautier. The experiments already carried out by Messrs. Stead and Wood, of Middlesbrough, are here repeated under somewhat altered conditions and with analogous results.—On the water of combination of the alums, by M. E. J. Maumené.—Heat of neutralisation of the meconic and mellic acids, by MM. H. Gal and E. Werner.—A contribution to the study of the fossil fruits of the Eocene flora in the west of France, by M. Louis Crié.—On the diseases of the olive, especially tuberculosis, by M. L. Savastano.—On the phenomenon of the green ray, by M. de Maubeuge. The author's repeated observations of this well-known phenomenon, both at sunset and sunrise under varying atmospheric conditions, lead him to conclude that it is really objective, and not merely a subjective sensation.—The Indo-European Canal and the navigation of the Euphrates and Tigris, by M. Emile Eude. It is suggested that with a capital of about 60,000,000*l.* a canal available both for navigation and irrigation might be constructed from the Mediterranean to the Persian Gulf, shortening the route to India by six days.

BOOKS AND PAMPHLETS RECEIVED

The History of Howietoun, and also of the Fish-Cultural Work: Sir J. R. G. Maitland (Guy, Stirling).—Mittellungen des Vereins für Erdkunde zu Halle, 1886 (Halle).—Traité de Zoologie Agricole: P. Brocchi (Baillière et Fils, Paris).—Pearls and Pearl-Life: E. Streeter (G. Bell and Sons).—The Owens College: J. Thompson (Cornish, Manchester).—Journal of the Royal Society of New South Wales, vol. xix. (Sydney).—The Pre-History of the North: J. J. A. Worsaae, translated by H. F. M. Simpson (Trübner).—The Age of Electricity: P. Benjamin (Cassells).—Journal of the Royal Microscopical Society, December (Williams and Norgate).—Hydraulic Power and Hydraulic Machinery: H. Robinson (Griffin).—Education Exhibits, part 1 (Washington).—Elementary Course of Practical Zoology: B. P. Colton (Heath, Boston).—Old and New Chemistry: S. E. Phillips (Wertheimer, Lea, and Co.).—Calendar of the University College of Wales, Aberystwith, 1886-87 (Cornish, Manchester).—A Treatise on Chemistry, vol. iii. part 3: Sir H. Roscoe and Prof. C. Schorlemmer (Macmillan).—A Text-Book of Pathological Anatomy and Pathogenesis, part 2, sections ix.-xii.: Prof. E. Ziegler, translated by Dr. D. Macalister (Macmillan).

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